

**REMARKS**

Reconsideration of the Office Action of June 14, 2007 is respectfully requested. Enclosed with this Amendment is a three-month Petition for Extension of Time together with the requisite fee.

In the present Amendment independent claim 5 has been amended by incorporating the subject matter of claim 7 (now canceled) as well as with some addition features as outlined below. In the present amendment independent claim 6 has been amended by incorporating the subject matter of claim 15 (now canceled) as well as with some addition features as outlined below. Claim 27 has also been amended while new claims 29/27 and 30/5 have been added.

In the Office Action there was requested a substitute specification. Per this request enclosed is a marked up copy and a clean copy of the Specification (absent the claims which are presented above). No new matter is considered to be presented by the amendments made in the accompanying substitute specification and the clean copy is believed to represent an accurate presentation of the changes represented in the marked up version.

An objection was also raised relative to the word spacing in the claim. In response to this suggestion, the claim format is changed.

The Office Action further includes the following prior art rejections:

<i>IDENTIFICATION/ CLAIM NOS.</i>		<i>STATUTORY GROUND</i>	<i>REFERENCE(S)</i>
<i>A</i>	<i>5-8,14-16, and 20 to 28</i>	<i>35 USC 103(a)</i>	<i>Raaijmakers (US '689) in view of [Nowak (US '201) or Forster (EP'873) and Qian (US '636)</i>
<i>B</i>	<i>9 and 17</i>	<i>35 USC 103(a)</i>	<i>Same as A plus Brcka ( '711)</i>
<i>C</i>	<i>10 and 11 and 18,19</i>	<i>35 USC 103(a)</i>	<i>Same as B plus Liu et al '170</i>

As noted above, the present amendment combines features of former claims 7 and 15 into independent claims 5 and 6, respectively, such that claims 5 and 6 include the following language:

*“high-frequency electric power being supplied from the second high-frequency electric power source to the mount to generate electric fields between the mount and the conducting member and to ignite plasmas based on only the high frequency power from said mount to said grounded conducting member, ~~and then,~~ after ignition is achieved with said second high-frequency electric power source, high-frequency electric power being supplied from the first high-frequency electric power source to the antenna means is initiated to generate induced electromagnetic fields in the belljar and generate inductive coupled plasmas, and then, the second high-frequency electric power source being stopped supplying high-frequency electric power to the mount after the first high-frequency electric power source has started the supply of the high-frequency electric power to the antenna means so that high-frequency electric power is supplied only to the antenna means, whereby the plasma processing is made on the substrate-to-be-processed.”*

Thus, according to the present invention, as set forth in claims 5 and 6, the high frequency electric power is supplied from the second high-frequency electric power source to the mount to generate electric fields between the mount and the conducting member and to ignite plasmas based on only the high frequency power. After ignition is achieved with said second high-frequency electric power source, high-frequency electric power is supplied from the first high-frequency electric power source to the antenna means is initiated to generate induced electromagnetic fields in the belljar to generate inductive coupled plasmas. And then, the second high-frequency electric power source is stopped from supplying high-frequency electric power to the mount after the first high-frequency electric power source has started the supply of the high-

frequency electric power to the antenna means so that high-frequency electric power is supplied only to the antenna means.

A review of the Office Action, relative to the now canceled claims 7 and 15, reveals that rejection "A" was applied against those claims and at least relative to claim 15 there was indicated the following:

"Furthermore, regarding claims 14-15 and 20, Qian et al. discloses shutting down the capacitively coupled plasma power after the inductively coupled plasma is initiated. In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Raaijmakers et al. modified by Nowak et al. or Forster et al. so as to shut down the capacitively coupled plasma as suggested by Qian et al. because in such a way an effective inductively coupled plasma with a small capacitively coupled portion can be maintained for inductively coupled plasma processing."

A review of Qian et al. reveals that a high-frequency electric power is supplied to the mount (the pedestal 107) and the conducting member (the electrode 220) during plasma ignition. Qian et al. also displays supplying high-frequency electric power to the antenna means while reducing or switching off supply of high-frequency electric power to the conducting member (the electrode 220). However, according to Qian et al., high-frequency electric power is supplied continuously to the mount (the pedestal 107) even after switching off supply of high-frequency electric power to the conducting member (the electrode 220). That is, Qian et al. fails to teach that the second high-frequency electric power source is stopped supplying high-frequency electric power to the mount after the first high-frequency electric power source has started the supply of the high-frequency electric power to the antenna means so that high-frequency electric power is supplied only to the antenna means.

A review of the other references cited relied upon in each of rejections "A" to "C" above also reveals that they fail to remedy this deficiency.

That is, as noted by the Examiner in the prior Office Action, the base reference to *Raaijmakers*'689 lacks a showing of a conducting member as featured in the present invention, a Faraday shield, a substrate heating device, and a sequenced power supply like that claimed in the present claims. Accordingly, *Raaijmakers* '689 lacks a showing of the feature outlined above in claims 5 and 6 and for which reliance was placed on Qian in an effort to remedy; although for the reasons shown above Qian fails to disclose or suggest the current claim 5 and 6 invention.

Forster et al. discloses an inductively coupled plasma reactor. However, during plasma ignition, the antenna (the induction coil 140) is always supplied with high-frequency electric power by the RF power source 150. That is, the invention taught by Foster et al. differs from the present invention, which ignites plasmas based on only the high frequency power supplied to the mount.

Nowak et al. discloses a chamber cleaning method in column 4, lines 19-61, in which high-frequency electric power 50 is supplied to the mount (the wafer pedestal 44) while the conducting member (the ceiling 24) is grounded. Nowak et al. also discloses the high-frequency electric power 32 is supplied to the antenna 26 after plasma ignition. However, Nowak et al. fails to teach that the second high-frequency electric power source is stopped from supplying high-frequency electric power to the mount after the first high-frequency electric power source has started the supply of the high-frequency electric power to the antenna means so that high-frequency electric power is supplied only to the antenna means.

In the Office Action independent claim 27 was rejected based on rejection "A" the above. In the "Response to Arguments" set forth in the Office Action concerning claim 27 there is set forth that the grounded conductivity member of Nowak is considered arranged within the plasma processing system

to be free from direct electrical connection with a high-frequency electric power source.

As seen by the current wording of claim 27 there is featured a grounded conductivity plate that is arranged within the plasma processing system to be permanently and at all times free of direct electrical connection with a high-frequency electric source. A review of Nowak reveals an arrangement wherein the plate is wired for switching between a grounded state and a state of direct electrical connection with a high-frequency source. Accordingly, the arrangement relied upon in Nowak cannot be said to disclose or suggest a grounded conducting member that is "arranged within the plasma processing system so as to be permanently and at all times free from direct electrical connection with a high-frequency electric power source. Further, no new matter is considered to have been introduced with this Amendment as the originally filed drawings clearly show such an embodiment and similar language to that in claim 29 is found in the current description.

Accordingly, claim 27 and its dependent are also respectfully submitted to be in condition for allowance. Also, new claim 29 includes sequencing language which, as described above, for claims 5 and 6 is not present in the references relied upon in the Office Action.

In addition, new dependent claim 30 (30/5) has been added and is similar to former claim 28 (28/27) with each describing a preferred limited overlap between the two HF sources (e.g., the shutting off of the second HF source while the first HF source starts to generate inductive electromagnetic fields). This relationship is a further feature not disclosed or suggested in the references relied upon in rejections A to C above. Reference is further made to page 13 of the present application for a discussion of the same.

U.S. Application Serial No. 10/635,651  
Attorney Docket No. 033082R167

Accordingly, it is respectfully submitted that the application stands in condition for allowance and favorable reconsideration is earnestly solicited.

If any fees are due in connection with the filing of this Amendment, such as fees under 37 C.F.R. §§1.16 or 1.17, please charge the fees to Deposit Account 02-4300; Order No. 033082R167

Respectfully submitted,

SMITH, GAMBRELL & RUSSELL, LLP

By: 

Dennis C. Rodgers, Reg. No. 32,936  
1130 Connecticut Avenue, N.W., Suite 1130  
Washington, DC 20036  
Telephone: 202/263-4300  
Facsimile: 202/263-4329

Date: December 14, 2007